

1 We claim:

1 1. A method to form a polymeric material, comprising the steps of:  
2 providing a water immiscible solvent;  
3 providing a condensation monomer, wherein said condensation monomer is  
4 essentially insoluble in said water immiscible solvent, and wherein said condensation  
5 monomer is a solid at room temperature;  
6 forming a reaction mixture comprising a suspension of said condensation  
7 monomer in said water immiscible solvent;  
8 heating said reaction mixture;  
9 collecting said polymeric material from said reaction mixture.

1 2. The method of claim 1, further comprising the step of adding one or more  
2 emulsifiers to said reaction mixture prior to heating said reaction mixture.

1 3. The method of claim 2, further comprising the step of adding one or more  
2 antioxidants to said reaction mixture prior to heating said suspension.

1 4. The method of claim 1, further comprising the steps of:  
2 reacting a first molecule of said condensation monomer with a second molecule of  
3 said condensation monomer to form a plurality of dimer molecules and a plurality of  
4 water molecules;  
5 removing said plurality of water molecules from said reaction mixture.

1 5. The method of claim 1, wherein:  
2 said providing a water immiscible solvent further comprises providing naphtha  
3 having a boiling point between about 190 °C and about 201 °C at ambient pressure;

4           said providing a condensation monomer step further comprises providing an  
5   equimolar mixture of adipic acid and m-xylene diamine;  
6           said heating step further comprises heating said reaction mixture to an internal  
7   temperature of about 174 °C;  
8           said method further comprising the steps of:  
9           removing water from said reaction mixture;  
10          increasing said internal temperature to about 200 °C; and  
11          cooling said reaction mixture to room temperature.

1           6.       The method of claim 1, wherein:

2           said providing a water immiscible solvent step further comprises providing  
3   naphtha having a boiling point between about 190 °C and about 201 °C at ambient  
4   pressure;  
5           said providing a condensation monomer step further comprises providing a  
6   mixture of diammonium aspartate and monosodium/ammonium aspartate;  
7           dispersing said monomer mixture in said naphtha to form a reaction mixture  
8   comprising a suspension;  
9           heating said reaction mixture to about 174 °C;  
10          removing water from said reaction mixture; and  
11          cooling said reaction mixture to room said polymeric material.

1           7.       The method of claim 6, wherein said providing step further comprises  
2   providing a monomer mixture comprising about equimolar amounts of diammonium  
3   aspartate and monosodium/ammonium aspartate.

1           8.       The method of claim 7, further comprising the step of adding sorbitan  
2 monostearate to said reaction mixture prior to heating said reaction mixture.

1           9.       A method to form a polymeric material, comprising the steps of:  
2           providing a water immiscible solvent;  
3           providing a condensation monomer, wherein said condensation monomer is  
4 essentially insoluble in said water immiscible solvent, and wherein said condensation  
5 monomer;

6           forming a reaction mixture comprising an emulsion comprising said condensation  
7 monomer and said water immiscible solvent;  
8           heating said reaction mixture;  
9           precipitating said polymeric material from said reaction mixture.

1           10.      The method of claim 9, wherein:  
2           said providing a condensation monomer step further comprises providing a  
3 solution comprising about (M) moles of diammonium aspartate and about (M) moles of  
4 sodium/ammonium aspartate in about (N) mL of water;

5           said heating step further comprises heating said reaction mixture to an internal  
6 temperature of about 100 °C;

7           said method further comprising the steps of:

8           removing said (N) mL of water from said reaction mixture;

9           increasing said internal temperature to about 130 °C;

10          removing about (M) moles of water from said reaction mixture;

11          forming a white colored precipitate;

12          increasing said internal temperature to about 171 °C;

13 forming a yellow-colored precipitate; and  
14 cooling said reaction mixture to room temperature under a nitrogen atmosphere to  
15 form an orange-colored polymeric material.

1 11. The method of claim 9, wherein:  
2 said providing a condensation monomer step further comprises providing a  
3 solution comprising about (M) moles of adipic acid and about (M) moles of m-xylene  
4 diamine in about (N) mL of water;  
5 said heating step further comprises heating said reaction mixture to an internal  
6 temperature of about 100 °C;  
7 said method further comprising the steps of:  
8 removing said (N) mL of water from said reaction mixture;  
9 increasing said internal temperature to about 130 °C;  
10 removing about (M) moles of water from said reaction mixture;  
11 forming a white colored precipitate;  
12 increasing said internal temperature to about 201 °C;  
13 cooling said reaction mixture to room temperature under a nitrogen atmosphere;  
14 and  
15 collecting said polymeric material.

1 12. A polymeric material, formed by:  
2 providing a water immiscible solvent;  
3 providing a condensation monomer, wherein said condensation monomer is  
4 essentially insoluble in said water immiscible solvent, and wherein said condensation  
5 monomer is a solid at room temperature;

6 forming a reaction mixture comprising a suspension of said condensation  
7 monomer in said water immiscible solvent;  
8 heating said reaction mixture;  
9 collecting said polymeric material from said reaction mixture.

1 13. The polymeric material of claim 12, wherein:

2 said providing a water immiscible solvent further comprises providing naphtha  
3 having a boiling point between about 190 °C and about 201 °C at ambient pressure;

4 said providing a condensation monomer step further comprises providing an  
5 equimolar mixture of adipic acid and m-xylene diamine;

6 said heating step further comprises heating said reaction mixture to an internal  
7 temperature of about 174 oC;

8 said method further comprising the steps of:

9 removing water from said reaction mixture;

10 increasing said internal temperature to about 200 oC; and

11 cooling said reaction mixture to room temperature.

1 14. The polymeric material of claim 12, wherein:

2 said providing a water immiscible solvent step further comprises providing  
3 naphtha having a boiling point between about 190 °C and about 201 °C at ambient  
4 pressure;

5 said providing a condensation monomer step further comprises providing a  
6 mixture of diammonium aspartate and monosodium/ammonium aspartate;

7 dispersing said monomer mixture in said naphtha to form a reaction mixture  
8 comprising a suspension;

9 heating said reaction mixture to about 174 °C;  
 10 removing water from said reaction mixture; and  
 11 cooling said reaction mixture to room said polymeric material.

1 15. The polymeric material of claim 14, wherein said providing step further  
 2 comprises providing a monomer mixture comprising about equimolar amounts of  
 3 diammonium aspartate and monosodium/ammonium aspartate.

1 16. The polymeric material of claim 15, further comprising the step of adding  
 2 sorbitan monostearate to said reaction mixture prior to heating said reaction mixture.

1 17. A polymeric material, formed by:  
 2 providing a water immiscible solvent;  
 3 providing a condensation monomer, wherein said condensation monomer is  
 4 essentially insoluble in said water immiscible solvent, and wherein said condensation  
 5 monomer;  
 6 forming a reaction mixture comprising an emulsion comprising said condensation  
 7 monomer and said water immiscible solvent;  
 8 heating said reaction mixture;  
 9 precipitating said polymeric material from said reaction mixture.

1 18. The polymeric material of claim 17, wherein:  
 2 said providing a condensation monomer step further comprises providing a  
 3 solution comprising about (M) moles of diammonium aspartate and about (M) moles of  
 4 sodium/ammonium aspartate in about (N) mL of water;  
 5 said heating step further comprises heating said reaction mixture to an internal  
 6 temperature of about 100 °C;

7        said method further comprising the steps of:  
8        removing said (N) mL of water from said reaction mixture;  
9        increasing said internal temperature to about 130 °C;  
10       removing about (M) moles of water from said reaction mixture;  
11       forming a white colored precipitate;  
12       increasing said internal temperature to about 171 °C;  
13       forming a yellow-colored precipitate; and  
14       cooling said reaction mixture to room temperature under a nitrogen atmosphere to  
15 form an orange-colored polymeric material.

1        19.     The polymeric material of claim 17, wherein:

2        said providing a condensation monomer step further comprises providing a  
3 solution comprising about (M) moles of adipic acid and about (M) moles of m-xylene  
4 diamine in about (N) mL of water;

5        said heating step further comprises heating said reaction mixture to an internal  
6 temperature of about 100 °C;

7        said method further comprising the steps of:  
8        removing said (N) mL of water from said reaction mixture;  
9        increasing said internal temperature to about 130 °C;  
10       removing about (M) moles of water from said reaction mixture;  
11       forming a white colored precipitate;  
12       increasing said internal temperature to about 201 °C;  
13       cooling said reaction mixture to room temperature under a nitrogen atmosphere;  
14 and

15           collecting said polymeric material.